



Matthew Hollern

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He earned a BS in Art and French at the University of Wisconsin-Madison. In his junior year he lived in Aix-en-Provence, France where he attended the Université Aix-Marseille, and studied blacksmithing at the École des Beaux-Arts - Aix-en-Provence. In 1989, he earned an MFA from Tyler School of Art, Temple University. He has received research and professional development grants from the Society of North American Goldsmiths, the Lilly Foundation, The John and Maxeen Flower Fund, the Cleveland Institute of Art, the Community Partnership for Arts and Culture - Creative Workforce Fellowship, and two Individual Artist Fellowships from the Ohio Arts Council. His work has been exhibited throughout the United States and Europe, and is included in public and private collections including the Renwick Gallery of the Smithsonian American Art Museum, Design Museum Helsinki - Finland, the Vatican Archive, the Ohio Crafts Museum, the Cleveland Art Association, Alcatel-Sprint, and others.

LOCUS v. NEXUS ...A Studio-Abstractum

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Abstract

Design, progressive ideologies, and recent events have combined in a redefinition of studio education, to achieve a “studio-abstractum.” The many mediums and disciplines of art, craft, and design all share a tradition of tangible-studio-based education, but what does that mean in a moment of dislocation and distancing? Digital technologies and mediated experiences are not in opposition to humanistic and meaningful design education when reimagined as a ‘Nexus’ of interaction, experimentation, and shared practice.

Key Words:

- **Context**
- **Radical**
- **Revelation**
- **Medium**
- **Message**
- **Literacy**

LOCUS v. NEXUS ...A Studio-Abstractum

The road to teaching studio online was long, but through design, rational.

Context

As MFA graduate students we were challenged to think about the future. The “studio” was presented as a laboratory and we were

engaged in research, historical and technical. It was not just craft techniques, materials, and archetypes; it was experimentation and research in materials and processes. Objectives included discovery, innovation, and contribution to knowledge. There was a strong emphasis on the potential and the meaning of Technology. In his article "Artists as Explorers of the Technological Frontier" (1987) Stephen Wilson offered an early provocation on technology and the studio: *"The arts have served many functions throughout history. One of the most important has been keeping watch on the cultural frontier... The challenge facing artists in our technological era is unprecedented. They are desperately needed as interpreters of culture."* (Wilson, 1987) In questioning the level of engagement, Wilson called for deeper knowledge and efforts comparable to advancements in the sciences and technology. He called for new contexts to explore technology, coupled with the holism of the arts. These ideas were (and are) appropriate directives. They remain essential to design, and the pedagogy of design education.

Radical

In January, 1989 computer-aided design / computer-aided manufacturing (CAD/CAM) for jewelry design was introduced by professor Stanley Lechtzin as a new course in Metalsmithing and Jewelry, a department within the Craft Area at Tyler School of Art, Temple University. It was the first of its kind in all of higher education, and it was radical. How could anyone teach craft using a computer? Craft was defined by the hand, the handmade, materials and tools skillfully applied to make things with your hands. Craft was (and is) a classification of objects, materials, and mediums. It was universally understood to be a subject taught in the studio, through lectures, demonstrations, and projects... manual, tangible, material, applied. I was a student in that course,

and the ideas we debated changed my thinking and my approach to teaching art and design.

At the time, a "hands-off" approach to making a craft object appeared to be a truly radical idea. How could CAD be applied to a world of handmade things? In the intervening years, it has been clear that the most important act was not in the specific, introducing CAD/CAM to craft education, but rather, fundamentally challenging the beliefs and conventions of generations of craftspeople and craft educators. Education is rife with beliefs and conventions, the duration of which can be detrimental to the advancement of new ideas. The German theoretical physicist, Max Planck famously addressed the nature of these beliefs: "*A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.*" (Planck, 1949) This is more than a critique of the 'opponents'. It is a useful observation on the social response to change. The observation is applicable to more than science, and by extension can be observed around "new and novel ideas." The resistance to change, to new and novel ideas, is paradoxically prevalent in teaching, in studio disciplines, in education, the place where we expect the advancement and contribution to knowledge, openness, and curiosity. As members of academia, we seek to present new ideas, methods and manifestations, derived from research, practice, teaching, and chance. The emphasis on Design, specifically Computer-Aided Design was a radical idea in Craft education in the 1980s. However, it is not radical to higher education as a matter of research, exploring new frontiers.

More than 30 years later, Design and CAD have become essential subjects and practices in craft education. And the methods have become part of the message. In a world of mass production, Craft

and Design play an essential role to advance and perpetuate unique aesthetic objects that record, interpret, reflect our time, and transcend our daily lives. Craft objects express our humanity, and serve our fundamental need for the union of art, design, and utility. Craft is interdisciplinary...hybrid... synthesis... exploring and combining elements of the conceptual, with art and design, with materials and technologies, from the most ancient to the leading edge. We encourage research, risk taking, and challenging conventions of design, materials, and technology. These ideas help to encapsulate the Craft + Design major at the Cleveland Institute of Art. We emphasize design + craft to acknowledge and address the opportunities that exist in the practices of design. And this is not new, we were very early adopters. For 23 years, CAD and digital technologies have been part of the craft curriculum in the Jewelry + Metals program. What was radical, is now integrated and simply represents a broadening of horizons.

Today there is new opposition, new things to resist, focused on distance education and online learning. For some it is a radical idea to propose to teach a studio course at a distance. This is not radical, nor is it novel. It is just adaptation, a transfer of methods from one discipline to another. Teaching a studio class online may be equivalent to using CAD in a craft course, if it changes the affordances of the process. But the bigger question is how do we change the larger context. Distance affords opportunities for something new and novel, a more experimental approach, something more radical. Teaching in the time of COVID has allowed progressive faculty to redefine "the studio." Opponents to distance education say that we cannot teach studio online. Distance education really only works for lectures and seminars... which begs the question... is that a scientific truth? Not likely! As with science, the history of craft and design includes many challenges to change, where new frontiers are explored by the few

and ignored by the many, and paradigms are slow to shift. Even so, craft and design education has benefited from many significant paradigm shifts, significant disruptions that change the norm.

Revelation

COVID-19 delivered such a disruption. The pandemic was a revelation, a massive disruptive event, a violent shift, and an extraordinary opportunity to redefine "studio", to consider "locus v. nexus." Suddenly, the classroom was unavailable, and the design studio was closed. Distance suddenly became "normal", and everywhere. Physical classrooms were abandoned. What happened next had to be radical, a rewrite of course syllabi, shifting online while sustaining objectives... at a distance... a nexus. We had to address our subjects and our mediums anew. In *Abstracting Craft: The Practiced Digital Hand*, (1996) Malcolm McCullough offered a novel definition of "medium", which is useful in redefining studio pedagogy, beyond the physical studio. *"The word "medium" has many meanings: a medium may be a material, such as plaster, or a means, an agency, or an instrumentality, such as the press. It may be an intervening person or thing, such as a messenger..."* Moreover, he offers an abstract set of three essential elements to define a medium: *"Engagement, Affordance, Constraint."* (McCullough, 1996) This proposal of abstract elements asserts the essence of medium is not dependent upon locus, but can be defined and achieved by experiences that occur in virtual or tangible space, interactively, nexus.

Mediate

In 2020, progressive design pedagogy was reinvented, compelled by distance, enriched by unprecedented confluence of positive factors: extraordinary advancement of "the digital", access to production and services formerly relegated to industry, and affordability provided by massive commercialization and

competition for the market of the individual practitioner. Craft + Design exists through and between tangible and virtual, in a period in history defined by hybrid and liminal activity. Studio is not locus, defined by a physical space in which design is created, a design studio. Design and studio are collaborative, multi-modal, intersection, interaction - nexus. It is less about space and more about time, including screen time. The atelier or the studio are only part of the equation, with the addition of digital technologies that have brought greater focus and attention to collaboration, and the "studio" as any virtual intersection rather than strictly a physical tangible location.

Distance education in craft + design + technology is achieving a paradigm shift. Whereas CAD is an application that offers a mediated experience in design, digital communication tools offer new mediated distance learning experiences, within which we apply other mediating methods, applications, and tools. It is uniquely modern in extent and effect. It is rational and reflexive. A mediated education by distance on subjects that include mediated experiences and practices is rational and self-validating. Abstracting "studio" may seem like a radical change but designs to modernize and redefine "studio" as nexus will eventually simply, be familiar.

Medium

CAD is a design activity, and a mediated experience. The 3D model is virtual, and intangible. Digital technology offers a meta-medium, a means behind a means. The digital activity of design is mediated by devices of affordance, constraint, and engagement. Here again the use of the abstract provides possibilities. Design is subject, experience, and context – simultaneously. Jewelry is a medium within design. Matthew Hollern is a jewelry design professor. Jewelry 'design' is ancient. "Jewelry was the first art

form, entering the archeological record tens of thousands of years before cave paintings and sculpted figurines” (Holcomb, 2018) And beads are the earliest of all. “The earliest known beads are associated with the Middle Paleolithic people.... dated to approximately 108,000 BCE.” (Sherr Dubin, 1987) Jewelry may be regarded as the first aesthetic medium of humanity, different from stone tools, which date back 2.5 million years in West Africa. By any analysis, materials, tools, and technology dominate the history of how we got here.

Before designers, before digital technology, we had needs, observations, curiosity, and ability to make things. The maker’s perspective on technology and the object has evolved through thousands of years. Our perception of making and objects has been and will continue to be in flux, and yet it is sustained by an original set of influences that have always been central to what we call Design. Ancient and early works were direct, visceral, very slightly mediated by simple tools or other objects. With each advancement, we recognize the influence of materials, tools, and procedures, and the importance of skill in design.

Traditionally, jewelry is taught at a bench, with tools and materials. The emphasis often begins with technique, and moves through historical archetypes. Today, CAD, 3D modeling and 3D printing are fundamental to the experiences and the curriculum, as well as the maker movement around the world. One course in particular, offered in the spring of 2020, Stone Setting, a classic tangible subject, serves as a case study of the potential to redefine studio education at a distance. In March of 2020, all studio courses moved online. While some courses relied on video to interface with students who worked on tangible designs in physical spaces in their residences, Stone Setting was redefined with strategies to emphasize design and engineering, with

rendering and 3D printing as forms of simulation. Students were encouraged to do an assessment of their new studio, and the new shared studio was redefined as nexus. The process to change strategies was critical. We acknowledged the pandemic, and the unique situation was addressed as the new context. The most influential presentation focused on “creative process”, making the case for distance, dislocation, and the abstract studio. (Hollern, 2020)

Creative Process

The creative process includes many steps and strategies. Its emphases vary from person to person, but most makers engage in a “workflow” with very similar elements. In craft education, we often emphasize the traditions of materials, process, and skills. In this new and unexpected setting, we change the focus. We redefine the “studio” and the “maker space.” I am a maker. My studio is in my basement and my garage. It is also in my head, my laptop, on the dining room table, and wherever else I chose to “make”. We have the power to recognize that the practice of metalwork and jewelry, and making, also requires another set of skills that are critical to successful practice as a professional. We have a significant set of elements that we can emphasize, and which can be achieved in an expanded definition of maker spaces and studios. Look at the elements of creative process. Many of them occur absent our favorite hand tool or machine.

...inspiration... subject... topic... problem... research... ideation... conceptualization... design... iteration... prototype... validation... application... materials... techniques... technologies... documentation... presentation... (repeat)...

The nature of the work also had to change. The emphasis shifted to the creation of a collection, which provided a challenge that would focus on concepts, design, and communication. "Collection" required 10 strategies presented as "components." Words and writing were critical to bookend the process. Concepts, exploration, iteration, and simulation all contributed to the experience. (Hollern, 2020)

Conceive • Design • Present • Collection

10 Components...

WORDS – in \approx 250 words, describe the concept for your setting collection

SKETCHES – in 40-60 thumbnail sketches, explore the components of the collection

RESEARCH – in 20 images, use captions to connect your research with your collection

DRAWING – in 4 views, create 3 technical scale drawings, to define 3 setting designs

MODELS – in 3 sketch models, use simple materials and techniques to prototype

DIGITAL – in 3 CAD models, develop the forms and details of the collection designs

RENDER – in 3 or more renderings, explore the look of materials with your design models

PROTOTYPE – in \leq 1,000,000 polygons, make a mesh to print parts to "assemble" a setting

PRINT – in 300ppi, use CAD to make a design process poster, including all of the above

WORDS – in \approx 250 words, describe the design process presented on your poster

Work in the abstract studio, design at a distance, required one other critical element, a focus on character. One of the most consequential subjects and expectations of the distance and dislocation was the focus on character. (Hollern, 2020)

Character

*adaptability... resilience... persistence... respect...
resourcefulness...reliability... positivity... discipline... ethical... moral...
work ethic... leadership... vision... self-reflection... self-direction... social
engagement... social skills... social responsibility...social distancing...
competence... inquisitiveness... curiosity... imagination... questioning...
creativity... communication... critical thinking... collaboration...
sensitivity... empathycharacter.*

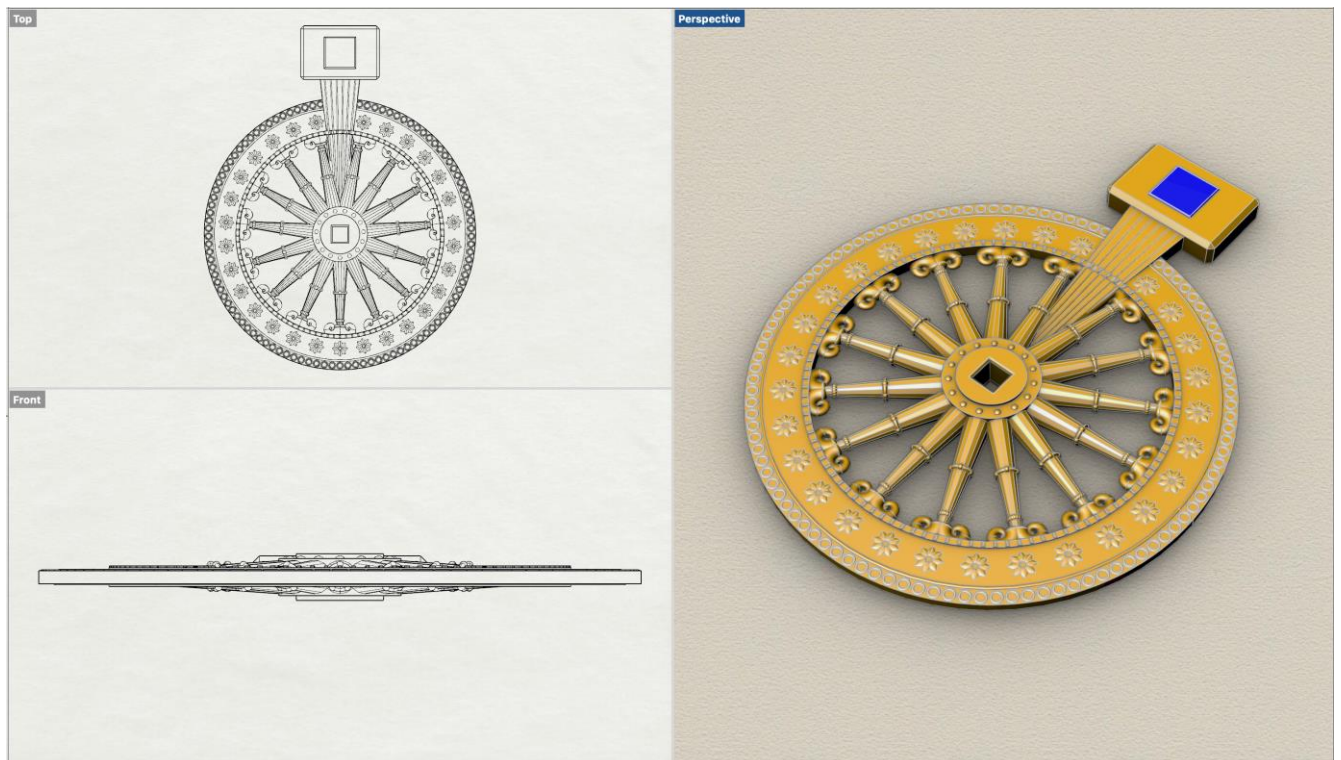
Students today understand that we “make” things in virtual space, and we print the things we make in plastics, resins, ceramics, glass, metals, and more. Designing is making, and making is thinking. Printing is material manifestation of what was made through a virtual studio experience. Additive manufacturing is the new frontier, accepted, familiar, and expanded horizon of craft, design, and making.

Message

Craft + Design coexist to be an important contributor to the Third Industrial Revolution (April 2012, Economist). “As manufacturing goes digital, it will change out all recognition.” The work we are doing in craft + design, across distances, mediated by technology, and manifest by additive manufacturing and neoteric matter, converges to send the message about Design; it is essential to the liberal arts, critical to transcend our work, while sending a message. It affords opportunities for design for all, and for social responsibility.

A recent project has provided the opportunity to bring it all together. It is a medal to recognize individuals for good work for the environment, The Elisabeth Haub Award for Environmental Law and Diplomacy, recently presented to Cristiana Figueres (architect of the Paris Climate Accords) by Pace University. It is project, achieved across distance, made through a nexus of design

and technology, 3D digital modeling, online review and collaboration, additive manufacturing, and scientifically-certified recycled gold, offering the opportunity to address matters of innovation and technology with responsible use of precious metals, and environmentally responsible manufacturing. The world is developing a greater awareness and a conscience about manufacturing and materials. Today we have access to many new materials, some known as 'neoteric matter', materials of new or recent origin. These include materials that are created by additive manufacturing processes, also known as 3D printing. Individual artists and designers are successfully exploring and applying these technologies to which only the largest corporations formerly had access. These include composite and sintered metal parts, made from stainless steel, titanium, aluminum, and other metals. These processes represent the future of manufacturing and making, with a commitment to reducing the environmental impacts of manufacturing.



In this new material, printed stainless steel parts are infiltrated with bronze, to create a hybrid material that is very beautiful. My own design work with 3D modeling spans more than 30 years, and more than 20 years working with digital manufacturing. The work I am able to create carries a message that goes beyond surface and form, and is expressed by the materials and technologies. Material is part of the message, and has symbolic weight. In 1964, Marshall McLuhan presented an important idea in Understanding Media: "...the medium is the message." (McLuhan, 1964) The use of 3D printing can offer a powerful message about new technologies and the environment, acknowledging that we cannot separate the message from the messenger.

Among the many benefits of these technologies, we are seeing more efficient and effective use of materials, reductions in energy consumption and carbon footprint. These new technologies are advancing and being adopted at every level. They reduce the number of processes, and the amount of other materials consumed in the making of design products. I believe in this work as an effort to explore new frontiers, and to do so with noble aspirations. I am compelled by this new part of our world of art, design, and making. It serves to redefine a noble metal. 3D printing and additive manufacturing offer myriad options in metals and finishes, which also symbolically align with the award, and some of the best thinking about sustainability in material science.

Literacy

Finally, it is clear that design and design education provide and cultivate essential abilities, sensitivities, and attributes to engage modern society and highly mediated, contemporary cultures. In a world of distance, Design is essential to the greater complexity of literacy, and the important opportunities and demands that coexist in a world connected across distance.

Beyond its conventional concept as a set of reading, writing and counting skills, literacy is now understood as a means of identification, understanding, interpretation, creation, and communication in an increasingly digital, text-mediated, information-rich and fast-changing world. (UNESCO, 2022)

Future

A theory of future practice is not conceived upon established practice alone. We must seek to reveal important new ideas and potential for the future of Design. Digital technologies continue to be a critical and influential catalyst in the advancement of material culture. Unlike any other period in the advancement of technology, within design, a digital craft will navigate a fundamental sea change that challenges the intellectual and emotional underpinnings of a former craft history. Craft + design have an unprecedented opportunity to share in the advancement of material culture, express humanity in a period of 'hybridity', offer extraordinary opportunities to makers, marked significantly by shared experimentation and collaboration, at a distance. Meaningful new practices will be defined by innovation and the promise of new materials, design methodologies, subjects, and concepts, all of which have been affected by the digital, and distance. Unlike any other new medium, the digital medium operates on a meta-level, reaching across all other mediums, offering a uniquely transdisciplinary nexus. The digital medium has been the catalyst for disruptive innovation in many parts of our lives, and while it may not be apparent, that will include digital craft + design. Finally, a theory of future practice must offer insights to shape new critical discourse, address the need for new

language, and document emerging conventions, definitions, terminology, and nomenclature.

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